

REMARKS

In the Official Action dated July 13, 2004, Claims 6-17 were withdrawn as being directed to a non-elected invention. Also in the Official Action, Claims 25-28 were rejected under 35 U.S.C. §112 as being indefinite because they were "product" claims that depended from a "composition" claim. Claims 1-3, 5 and 18-28 were rejected under 35 U.S.C. §103 as being unpatentable over WO00/03859 to Nomura et al. (herein "Nomura") in view of the Examiner's Official Notice of the prior art.

In response to the Official Action, Claims 25-28 have been amended to overcome the rejection under 35 U.S.C. §112 and Claims 1 and 18 have been amended to more particularly point out the subject invention.

Claim 1 is directed to a composition having a polymer and glass fibers that are selected according to certain properties as more specifically set forth therein. The polymer material is formed to have internal closed cells and the glass fibers have selected properties such that the resulting product has certain physical properties, particularly a high modulus. Among other differences, Claim 1, as presently amended, is patentable over the cited reference in that it requires (1) "a polymer material that is extruded to have internal closed cells" in combination with (2) "glass fibers that are imbedded in the closed cell polymer material" and that have "a fiber length in the range of 50 to 900 microns". Nothing in Nomura makes such a combination unpatentable.

Nomura discusses several categories of prior art – injection molding, blow molding, and molding with an expansion cavity. Reviewing Nomura in detail, it is seen that its teachings actually lead away from the subject invention and evidence patentability!

Nomura – Injection Molding

Nomura mentions prior art injection molding processes that are said to have incorporated glass fibers into resin moldings to improve mechanical properties such as tensile strength and flexural strength. (Nomura, Col. 1, lines 17-37). According to Nomura, increasing the amount of fibers increased the strength and stiffness of such fiber-reinforced moldings that were made by injection molding processes. However, the increase in fiber content also increased the weight of the moldings. In some cases, a foaming agent was added to reduce the weight of the molding. (Nomura, Col. 1, lines 37-48). However, it was difficult to reduce the weight of such injection moldings to a satisfactory degree solely through the use of foaming agents. Even when a satisfactory weight reduction could be attained, the mold pattern transferability was often poor and the injection molding would have surface blemishes. (Nomura, Col. 1, lines 49-59).

Claim 1 does not address products that are made by injection molding processes. Rather, Claim 1 requires "a polymer material that is extruded to have internal closed cells." Nomura does not discuss extrusion processes nor does Nomura suggest that the prior art injection molding compositions included internal closed cells. Furthermore, Nomura does not suggest that prior injection molding processes ever used fibers with "a length in the range of 50 to 900 microns.

Nomura – Blow Molding

As an alternative to injection molding (discussed above), Nomura states that an alternative blow molding process was utilized to reduce the weight of the resin moldings and afford good mechanical properties. In the blow molding process, resin pellets that had "relatively long" fibers were molded into lightweight moldings. (Nomura, Col. 1, line 61- Nomura, Col. 2, line 3). In this method, the "spring-back" function of the fibers helped to

expand the resin. In some cases, a foaming agent was also added to such blow molding methods. (Nomura, Col. 2, lines 3-8).

Here again, Claim 1 does not address compositions used in any blow molding process. Conversely, Nomura does not suggest a polymer material that is extruded to have "internal closed cells" or fibers with "a length in the range of 50 to 900 micron." The blow molding discussion of Nomura does not mention cell structure and there is no reason to suppose that the "relatively long" fibers of Nomura's blow molding discussion fall within Applicant's range of 50 to 900 microns.

Nomura – Expansion Cavity

Nomura further states that in some instances in the prior art, a resin melt was injected into an expandable mold cavity. (Nomura, Col. 2, lines 13-19). The cavity was then expanded to form a hollow space in the resin molding. However, in some cases this process resulted in the resin melt surfaces becoming stretched and drawn. This process also caused internal projections that resulted in sinkmarks on the molding surfaces. (Nomura, Col. 2, lines 19-33).

To avoid the growth of internal projections on the molding, a low-foaming thermoplastic resin was injected into the expandable mold. (Nomura, Col. 2, lines 33-35). According to this method, after the mold cavity was expanded, a pressurized inert fluid (e.g. nitrogen) was introduced into the internal cavity to further enlarge the size of the molding internal cavity. (Nomura, Col. 2, lines 35-43). Nomura reports that this method resulted in moldings having a good surface condition, but the moldings often did not have good stiffness or strength. (Nomura, Col. 2, lines 58-65). Furthermore, the amount of foaming agent that was required often caused surface blemishes in the molding. (Nomura, Col. 2, line 65- Nomura, Col. 3, line 5).

Once again, Claim 1 is directed to a composition wherein a polymer material is extruded to have closed cells. The expansion cavity method of Nomura has nothing to do with extrusion processes and there is no mention that the expansion cavity process produced closed cells. Also, the 50-900 micron fiber length that is required by Claim 1 is nowhere mentioned with respect to Nomura's prior art expansion cavity processes.

Nomura – Internal Rib Structure

The invention of Nomura is said to be directed to lightweight moldings that are made according to a process wherein a mold cavity is filled with a resin melt and a pressure fluid is introduced into the mold cavity while the mold cavity is expanded. (Nomura, Col. 3, lines 36-52). According to the method in Nomura, lightweight moldings are provided with an inner cavity and a rib structure that traverses the inner cavity to strengthen the molding. (Nomura, Col. 5, lines 39-59). A melt of fiber-containing thermoplastic resin is injected into the mold cavity or is injected and compressed therein. (Nomura, Col. 7, lines 12-24; Col. 14, lines 48-54). The mold cavity is then expanded and the gas is injected into the resin melt after the cavity expansion is initiated. (Nomura, Col. 7, lines 36-38). The walls of the mold cavity have recesses wherein the resin resides during injection. (Nomura, Col. 8, line 32-42). The ribs are drawn from the recesses as the mold cavity is expanded. (Nomura, Col. 11, lines 1-7).

Some embodiments of Nomura expressly do not use foaming agents. Instead, the "spring-back" function of the fibers is relied on to expand the melt. (Nomura, Col. 5, lines 48-55). However, if the fibers are too short to provide restoring ability to the resin, a foaming agent can be used. (Nomura, Col. 11, lines 33-35).

The presently claimed invention concerns a polymer material that has extruded internal closed cells. Nowhere does Nomura describe or suggest a composition wherein an extruded

polymer material has internal closed cells and glass fibers that are imbedded in the closed cell polymer material. Nomura discusses various other molding techniques, but does not even mention extrusion processes. In contrast to the "closed cells" of Claim 1, Nomura, does not have closed cells. In fact, Nomura actually teaches away from the "closed cells" that are required by Claim 1! The moldings made according to Nomura are specifically said to be have "an open cellular structure." (Nomura, Col. 8, lines 63-68). In Nomura, the injected gas participates in the formation of an internal hollow area and also in the formation of the pores in the moldings. When the gas is introduced to the mold, it permeates through the foamed cell walls to disperse throughout the molding. (Nomura, Col. 14, lines 3-12). According to Nomura, the "air permeable pores ... do not have a macroscopically detectable, definite, hollow area but are so constructed that gas is permeable through the structure of the moldings." (Nomura, Col. 15, lines 53-57).

Claim 18

Claim 18 is patentable over Nomura in that, among other reasons, Claim 18 requires that the composition be made according to the step of "extruding the melt through a die to form a polyvinyl material having closed voids and also having glass fibers imbedded therein." As discussed previously with respect to Claim 1, Nomura does not even mention an extrusion process and nowhere does Nomura suggest that the polyvinyl material should have closed voids. In fact, the teachings of Nomura are exactly the opposite! Nomura states that the cells produced according to the process therein described are "open" cells and that the porosity derives from air permeable pores that do not have a macroscopically detectable, definite hollow area. (Nomura, Col. 8, lines 63-68; Col. 15, lines 53-57).

Claims 2-3, 5 and 19-28

Claims 2 –3, 5 and 19-28 are dependent on Claims 1 and 18 respectively and incorporate all the limitations thereof. Accordingly, among other reasons, Claims 2-3, 5 and 19-28 are patentable over Nomura for the same reasons as stated for Claims 1 and 18.

A reference does not contain a suggestion to combine references and teaches away from the invention if one of ordinary skill in the art following the line of development disclosed in the reference would not likely produce the Applicant's result. Tec Air, Inc. v. Denso Mfg. Michigan, Inc., 192 F.3d 1353, 1360 (Fed. Cir. 1999). Ecolochem, Inc. v. Southern California Edison Co., 227 F.3d 1361 (Fed. Cir. 2000), reh'g denied, in banc suggestion declined, (December 13, 2000) and cert. denied, 121 S. Ct. 1607 (2001). (Secondary reference recommended alternative method to that of primary references.) Following the prior art as developed in Nomura as well as the teachings of Nomura itself, one normally skilled in the art would be led to use some variant of injection molding, blow molding, or expansion cavity processes as are discussed in Nomura. An extruded polymer with closed cells and imbedded glass fibers having a length in the range of 50-900 microns as required by Claims 1-3, 5 and 18-28 would remain unknown. Nomura says nothing about an extruded polymer having closed cells as required by Claims 1-3, 5 and 18-28. Thus, Claims 1-3, 5 and 18-28, as presently amended, are patentable over Nomura, the only cited reference.

The Applicant objects to the use of "Official Notice" to support the contention that an extruded composition having internal closed cells and imbedded glass fibers is known in the art for the reason that it fails to meet the requirements of substantial evidence. Unless such knowledge is capable of instant and unquestionable demonstration as being well-known, reliance on "Official Notice" is improper. *In re Ahlert*, 424 F.2d 1088, 1091 (CCPA 1970). Nothing in

the record suggests that it is known in the art to extrude a polymer material having closed cells with glass fibers having a length in the range of 50 to 900 microns imbedded therein. On the contrary, the presence of closed cells is directly opposed to the teachings of Namura which requires open cells. Such reliance on "common knowledge" without evidentiary support in the record as the principal evidence upon which a rejection is based is improper. *In re Zurko*, 258 F.3d 1379 (Fed. Cir. 2001).

The Official Action's bare assertions of "ordinary skill in the art" cannot bridge the gaps in the prior art. Missing suggestions cannot be supplied merely by reference to "ordinary skill in the art." Imbuing one of ordinary skill in the art with the knowledge of the invention at issue in the absence of art that conveys or suggests such knowledge is to fall victim to hindsight reconstruction. *Al-Site Corp. v. VSI Int'l, Inc.*, 174 F.3d 1308 (Fed. Cir. 1999). The best tool in preventing impermissible hindsight reconstruction is the rigorous application of the requirement for a showing of a teaching or motivation to combine prior art references. *In re Dembiczak*, 175 F.3d 994 (Fed. Cir. 1999) (reversing the Board of Patent Appeals and Interferences' affirmation of the Patent Office's obviousness rejections). There is no suggestion in the cited references as to why one skilled in the art would be led by a reference that teaches the use of injection molding, blow molding, and modified expansion cavity processes to attempt to use an extrusion process to produce a polymer with closed cells and imbedded fibers. Claims 1-3, 5 and 18-28, therefore, are patentable over Nomura.

The Official Action engages an impermissible "obvious to try" standard for which the cited reference, fails to teach all the limitations required by the claims. There is no obvious motivation to modify the elements of the claims as suggested in the Official Action. Indeed, a careful review of Nomura leads to the exact opposite conclusion! The art rejection proposed by

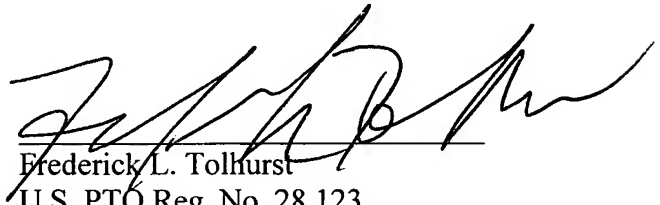
the Official Action is necessarily based on the Applicant's own teachings and not the teachings of Nomura. What may have been within the knowledge of one skilled in the art is insufficient absent evidence that one of ordinary skill in the art actually possessed such knowledge. Smiths Indus. Med. Sys., Inc., 183 F.3d 1347, 1356 (Fed. Cir. 1999).

The claims are not made unpatentable by modifying or combining the references in accordance with the Applicant's own teachings. A determination of obviousness must involve more than indiscriminately combining prior art. Micro Chem., Inc. v. Great Plains Chem. Co., Inc., 103 F.3d 1538, 1546 (Fed. Cir. 1997), cert. denied, 117 S. Ct. 2516 (1997). The Patent Office must show a motivation to combine references to prevent the use of the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. In re Rouffet, 149 F. 3d 1350 (Fed. Cir. 1998) (reversing the Patent Office Board of Appeals holding of obviousness). The requirement of a motivation to combine references is necessary to prevent findings of obviousness based improperly on "the subtle but powerful attraction" of hindsight reconstruction. Ruiz v. A.B. Chance Co., 234 F. 3d 654, 664-65 (Fed. Cir. 2000). Absent any disclosure or suggestion of an element or step that the cited references have failed to disclose, there can be no motivation to modify the prior art to arrive at the claimed invention. In re Kotzab, 217 F. 3d 1365, 1370 (Fed. Cir. 2000)(reversing the Patent Office Board of Appeals and Interferences' affirmance of the Patent Office rejection of an application based on a combination of references).

In accordance with the forgoing amendments to the Claims and in view of the above remarks, Claims 1-3, 5 and 18-28 are considered to be in condition for allowance and such allowance is hereby respectfully requested.

Respectfully submitted,

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